

**AMENDMENTS TO THE SPECIFICATION**

Please amend title as follows:

**APPARATUS AND METHOD FOR GENERATING A CALLING TONE OF  
WIRE/WIRELESS TELEPHONE**

Please amend paragraphs [0002]-[0007], [0012], [0033], [0035]-[0037], [0048], [0053], [00553], [0056], [0058], [0060], [0062], [0063], [0075], [0087], [0110] and [0126] as follows:

[0002] The present invention generally relates to an apparatus and a method for generating a calling tone of a wire/wireless telephone and, more specifically, to an apparatus and a method for generating a calling tone of a wire/wireless telephone ~~so as to sense the~~ in dependence upon sensed distance to between a portable device (wireless telephone) and a fixed device (fixed body or base of a telephone) according to electric field strength of a received ring signal when the ring signal is received in a portable device of the wire/wireless telephone, and for selectively controlling generation of the calling tone according to the sensed distance.

[0003] Generally, a wire/wireless telephone is composed of a fixed device (wired telephone) and a portable device (wireless telephone). The fixed device can directly make a call to the outside by being connected to a wire line, and the portable device can make a call to the outside by wireless communication with the fixed device.

[0004] When a call is generated from the outside, the ~~wireless~~ wire/wireless telephone system

generates a calling tone in the fixed device, and immediately transmits a ring sensing signal to the portable device ~~at the same time~~, thereby processing a ring calling tone in the portable device. Thus, the ring calling tone simultaneously rings in the fixed device and in the portable device.

[0005] In this case, ring calling bell sounds simultaneously occur in both the fixed device and the portable device. If the bell sound of the fixed device is louder than that of the portable device, it may be difficult to ~~find a position for~~ locate the portable device when a user wants to answer the phone with the portable device having the relatively smaller ring calling bell sound.

[0006] Also, when the wire/wireless telephone is an IT phone having a portable device, it is supposed to produce a higher sound by using a device having more than forty chords ~~in order to process a calling tone~~. However, since the calling tone of the portable device is designed to have a buzzer or a single-sound bell sound, there may be considerable differences in the sound source.

[0007] Therefore, when receiving a ring signal in the wire/wireless telephone system having such a portable device, different sound sources are created since calling tones of the fixed device and the portable device are different from each other ~~when receiving a ring signal in the wire/wireless telephone having such a portable device~~. As a result, when the fixed device is located near the portable device, a user ~~can listen to~~ may hear unpleasant calling tones owing to the different calling tones.

[0012] The system controller processes a ring calling tone according to the ring receiving detection signal supplied from the ring signal detector, outputs the ring calling tone to the speaker through the first amplifier, and controls transmission of wireless data for a ring calling tone processing control signal to the portable device through the third amplifier and the wireless modem. The system

controller processes a ring calling tone during ring-on time ~~in~~of the ring receiving detection signal, controls output of the ring calling tone through the first amplifier and the speaker, and controls transmission of a ring calling tone processing control signal to the portable device through the wireless modem during a ring-off time (idle period) of the ring receiving detection signal. In addition, the system controller controls processing of a single-sounded ring calling tone or a high-chord ring calling tone with more than forty chords according to the kind of wire/wireless telephone.

[0033] However, if the idle period of the ring signal is detected from the detected ring signal, wireless data for the ring calling tone generating control signal is transmitted to the portable device during the idle period of the ring signal by controlling the RF transceiving module of the wireless modem of the fixed device.

[0035] After that, it is determined whether the hook switch is turned on during telephone conversation. If it is determined that the hook switch is turned on, the call is completed ~~to initialize~~ and the fixed device is initialized. In other words, the fixed device is converted into the standby state.

[0036] If it is not determined that the hook switch is turned off, the wireless data for the ring calling tone generating control signal transmitted from the fixed device is received through the RF transceiving module of the wireless modem of the portable device, and is supplied to the system controller of the portable device.

[0037] Then, the system controller of the portable device controls outputting of a calling tone, such as a bell sound or a melody sound, through the speaker according to a ring receiving control

signal transmitted from the fixed device during the idle period of the ring signal.

[0048] According to another embodiment of the invention, an apparatus for processing a calling tone of a wire/wireless telephone comprises: a receiver for receiving a wireless signal for a ring receiving generation control signal transmitted from a fixed device; a detector for detecting electric field strength for the ring receiving generation control signal received from the receiver; a distance measurer for comparing the field strength detected from the detector with many preset field strength values, and for measuring distance to the fixed device; a controller for controlling to disabling generation of the melody sound when the distance measured by the distance measurer is less than a preset reference distance, and for generating the melody sound when the measured distance is not less than the preset reference distance, and then generating a receiving message display control signal regardless of the measured distance; a display for displaying a ring receiving message according to ~~a the ring receiving message generation display control signal as a result of a ring receiving message generation control signal generated in by~~ the controller; and a storage unit for storing the preset electric field strength values and distance values corresponding to the electric field strength values.

[0053] Moreover, in an apparatus for processing a calling tone of a wire/wireless telephone in accordance with another embodiment of the present invention, the apparatus comprises: a key input unit for supplying a key input signal to select one of an automatic mode and a manual mode according to user selection; a detector for detecting electric field strength of a ring receiving generation control signal when the ring receiving generation control signal is received from the fixed device after the automatic mode is set by the key input unit and a ring is received; a distance

measurer for comparing the field strength detected by the detector with a plurality of preset electric field strength values, and for measuring distance to the fixed device; a controller for comparing the distance measured by the distance measurer with a preset reference distance, ~~and~~ for controlling generation of a melody sound for a received ring according to the comparison result; a storage unit for storing preset electric field strength values and distance values corresponding to the electric field strength values when the automatic mode is selected through the key input unit, and for storing a reference distance value selected by a user under control of the controller when the manual mode is selected through the key input unit; and a display unit for displaying a ring receiving message according to a receiving message ~~generation~~ display control signal generated ~~in~~ by the controller regardless of automatic mode or manual mode selection through the key input unit and the distance measured by the distance measurer.

[0055] The portable device can include: a receiver for receiving a wireless signal corresponding to the ring receiving generation control signal transmitted by the fixed device; a detector for detecting electric field strength of the ring receiving generation control signal received from the receiver; a distance measurer for comparing the electric field strength detected by the detector with preset electric field strength values, and for measuring distance to the fixed device; a controller for controlling disabling of generation of a melody sound when the distance measured by the distance measurer is less than a preset reference distance, for generating the melody sound when the measured distance is not less than the preset reference distance, and for generating a receiving message display control signal regardless of the measured distance; a display for displaying a ring receiving message according to ~~a ring~~ the receiving message ~~generation~~ display control signal generated ~~in~~ by the

controller; and a storage unit for storing the preset electric field strength values and distance values corresponding to the electric field strength values.

[0056] Furthermore, the portable device can include: a key input unit for supplying a key input signal for selecting one of an automatic mode and a manual mode according to user selection; a detector for detecting electric field strength of a ring receiving generation control signal when the ring receiving generation control signal is received from the fixed device after the automatic mode is set by the key input unit and a ring is received; a distance measurer for comparing the electric field strength detected by the detector with a plurality of preset field strength values, and for measuring distance to the fixed device; a controller for comparing the distance measured by the distance measurer with a preset reference distance, and for controlling generation of a melody sound for the received ring according to the comparison result; a storage unit for storing the preset electric field strength values and distance values corresponding to the electric field strength values when the automatic mode is selected through the key input unit, and for storing a reference distance value selected by a user under control of the controller when the manual mode is selected through the key input unit; and a display unit for displaying a ring receiving message according to a receiving message ~~generation~~ display control signal generated by the controller regardless of automatic mode or manual mode selection through the key input unit and the measured distance.

[0058] According to another embodiment of the invention, a method of processing a calling tone of a wire/wireless telephone comprises the steps of: receiving a wireless signal comprising a ring receiving generation control signal transmitted from a fixed device; detecting electric field strength for the received ring receiving generation control signal; comparing the detected electric field

strength with a plurality of preset electric field strength values, and measuring distance to the fixed device; controlling disabling of generation of a melody sound when the measured distance is less than a preset reference distance, generating the melody sound when the measured distance is not less than the preset reference distance, and generating a receiving message display control signal regardless of the measured distance; and displaying a ring receiving message according to ~~a ring the generated~~ receiving message generation display control signal ~~resulting from a generated ring receiving message generation control signal.~~

[0060] According to another embodiment of the invention, a method of processing a calling tone of a wire/wireless telephone comprises the steps of: executing a mode selection step to select one of an automatic mode and a manual mode according to user selection; detecting electric field strength of a received ring receiving generation control signal when the ring receiving generation control signal is received from a fixed device after a ring is received and the automatic mode is set by a user; comparing the detected electric field strength with preset field strength values, and measuring distance to the fixed device; comparing the measured distance with a preset reference distance, and selectively processing a calling tone for the received ring according to the comparison result; and displaying a ring receiving message according to a generated receiving message generation display control signal regardless of automatic mode or manual mode selection in the mode selection step and the measured distance.

[0062] The step of selectively processing the calling tone comprises the sub-steps of: receiving a wireless signal corresponding to a ring receiving generation control signal transmitted by the fixed device; detecting electric field strength of the received ring receiving generation control signal;

comparing the detected field strength with a plurality of preset electric field strength values, and measuring distance to the fixed device; controlling disabling of generation of a melody sound when the measured distance is less than a preset reference distance, generating the melody sound source when the measured distance is not less than the preset reference distance, and generating a receiving message display control signal regardless of the measured distance; and displaying a ring receiving message according to ~~a ring~~ the generated receiving message ~~generation~~ display control signal ~~resulting from a generated ring receiving message generation control signal.~~

[0063] Furthermore, the step of selectively processing the calling tone comprises the sub-steps of: selecting one of an automatic mode and a manual mode according to user selection; detecting electric field strength of a received ring receiving generation control signal when the ring receiving generation control signal is received from the fixed device after a ring is received and the automatic mode is set by a user; comparing the detected electric field strength with a plurality of preset electric field strength values, and measuring distance to the fixed device; comparing the measured distance with a preset reference distance, and selectively processing a calling tone of the received ring according to the comparison result; generating a receiving message display control signal regardless of the measured distance; and displaying a ring receiving message according to the generated receiving message ~~generation~~ display control signal regardless of automatic mode or manual mode selection in the mode selection step and the measured distance.

[0075] The system controller 102 processes a ring calling tone according to the ring receiving detection signal supplied by the ring signal detector 101, outputs the ring calling tone to the speaker 111 through the first amplifier 107, and controls transmission of wireless data for a ring calling tone



processing control signal to the portable device 200 of Fig. 2 through the third amplifier 109 and the wireless modem 110. The system controller 102 processes a ring calling tone during a ring-on time ~~in~~ of the ring receiving detection signal, controls output of the ring calling tone through the first amplifier 107 and the speaker 111, and controls transmission of a ring calling tone processing control signal to the portable device 200 through the wireless modem 110 during a ring-off time or idle period of the ring receiving detection signal. In addition, the system controller 102 controls processing of a single-sound ring calling tone or a high-chord ring calling tone with more than 40 chords according to the type of wire/wireless telephone.

[0087] The storage 205 stores an ID of the portable device 200 and various programs, and temporarily stores various data generated during execution of the programs under control of the system controller ~~103~~ 203.

[0110] The key input unit 307 has number keys for performing various functions and dialing functions, and supplies a key input signal, inputted according to user selection, to the system controller 304.

[0126] The RSSI detector 303 detects an RSSI (~~Receiving Signal Level Detect Output~~ Received Signal Strength Indication) signal of the RF signal from the ring receiving generation control signal received through the third amplifier 302. In another words, the RSSI detector 303 detects a receiving electric field strength of the RF signal for the ring receiving generation control signal transmitted from the fixed device 100.

[0137] If a ring signal idle period is not detected, the calling tone is continuously generated. The ring signal ~~is~~ received from the local line ~~as is~~ is shown in Fig. 4, and has ring-on and ring-off time

periods, thereby generating a calling tone during the ring-on time period and stopping the generation of the calling tone during the ring-off time period. The operation of generation of the calling tone is repeated during the ring-on time period again, and thus the user can listen to a ring receiving sound.